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EXAMINER

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ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/291,426	Applicant(s) Kohn et al.
	Examiner G. Hsu	Group Art Unit 1627

☒ Responsive to communication(s) filed on *Jan 22, 2001* .

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire *three* month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) *1-28* is/are pending in the application.

Of the above, claim(s) *4, 6-8, 11-13, 15, 16, 22, 25, and 28* is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) *1-3, 5, 9, 10, 14, 17-21, 23, 24, 26, and 27* is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐approved ☐disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☐ received.

☐ received in Application No. (Series Code/Serial Number) _____ .

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____ .

☒ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☒ Information Disclosure Statement(s), PTO-1449, Paper No(s). *4*

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

DETAILED ACTION

1. A Petition for a 4-Month Extension of Time and a Reply Pursuant to 37 C.F.R. 1.111, respectively received January 22, 2001, were entered respectively as Paper Nos. 9-10.

Election/Restriction

2. Applicants election in Paper Nos. 7 and 10 of:

[a] Group I, claims 1-27; and

[b] the species of claims 5, 14, 17, 21

[c] elect a compound of the structure depicted in claim 21:

wherein b is 1;

R1 is (CH2)a, wherein a is 2, in which the R1 linking moiety on the left side of the first monomeric structure is attached to the left side of the benzene ring para to the hydroxy group attached to the aforementioned ring and the (CH2)b moiety on the right side of the first monomeric structure is attached to the right side of the benzene ring

R2 is a straight-chained alkyl groups having up to 18 carbon atoms, especially hexyl groups; and

[d] the species of claim 19, wherein:

[1] the second monomer species is carboxylic acids

[2] the third monomer species is ethylene oxide

[e] the species of claim 28, wherein co-polymers are further modified by cross-linking

are acknowledged.

Because applicants did not distinctly and specifically point out the supposed errors in the restriction requirement, the elections have been treated as an elections without traverse (MPEP § 818.03(a).

3. The species of claims 19 and 21 that have not been elected, other than those species identified above are withdrawn from further consideration by the Examiner under 37 C. F. R. 1.142(b), as being drawn to a non-elected species, the requirement having not been traversed in Paper Nos. 7 and 10.

4. Claims 4, 6-8, 11-13, 15-16, 22, 25 and 28 are withdrawn from further consideration by the Examiner under 37 C. F. R. 1.142(b), as being drawn to a non-elected inventions and/or species, the requirement having not been traversed in Paper Nos. 7 and 10.

Status of Claims

5. Claims 1-27 are pending in the current application.

6. Claims 1-3, 5, 9-10, 14, 17-21, 23-24 and 26-27 are under examination in the current application.

7. Claims 29-85 are canceled as per applicants' May 16, 2000 request.

New Grounds of Rejection

Specification

8. The disclosure is objected to because of the following informalities.

9. The drawings are objected to under 37 CFR 1.83(b) because the chemical structures of the instant specification as identified below are incomplete:

[a] Formula I, on page 6, lines 21-24; and

[b] Formula II, on page 7, lines 17-22

fail to show chemical bonds between the atoms that form the polymer of the aforementioned formula. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d).

10. Appropriate correction of the above-identified issues are required.

Interpretation of Claims

11. For this office action, the preamble of the product by process claims 1-3, 5, 9-10, 14, 17-21, 23-24 and 26-27 were interpreted as "a composition of matter" (which are ***products***, wherein the chemical nature of the substances or materials used, ***rather than the shape or form, is the distinguishing characteristic***. A composition may be a molecule, compound, solution, mixture, alloy, atom, etc.).

Product by process claims are not limited to the manipulations of the recited steps, only to the structure implied by the steps. M.P.E.P. Section 2113 states that:

> "[E]ven though product-by-process claims are limited by and defined by the process, **determination of patentability is based on the product itself.** The patentability of a product does not depend on its method of production. **If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.**" In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted)

In a product or composition claim, intended use language is not afforded patentable weight, i.e., such as the intended use language recited in claims 1-5. In a product or composition claim, it is not essential to state the intended use for the composition/compound in the preamble. An example of intended use language recited in instant claim 1 is:

> "said homologous variations of said monomer series are selected to determine the effect of independently varying at least two different structural features of said copolymer on at least one end-use property of said copolymer."

12. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963).

13. Appropriate amendments to the claims is requested.

Claim Rejections - 35 USC § 112

14. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.
>
> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

15. Claims 1-3, 5, 9-10, 14, 17-21, 23-24 and 26-27 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a copolymer array of polyacrylate copolymers and methods for the synthesis of said polyacrylate copolymers prepared by the condensation of a tyrosine-derived diphenol compounds and a dicarboxylic acids; ***but does not reasonably provide*** enablement for ***all*** co-polymer arrays comprising a plurality of ***all*** co-polymers polymerized from two independent variable sets of ***all*** compound monomers, wherein said polymerization is characterized by [a] selecting a first homogeneously varying series of ***all*** monomers with ***all*** non-varying polymerizable functional groups; [b] selecting at least one additional homologously varying series of different monomers having ***all*** non-varying polymerizable functional groups that are reactive with ***all*** polymerizable functional groups of said first series of monomers to form ***all*** co-polymers; and [c] separately reacting a plurality of ***all*** monomers from said first monomer series with a plurality of ***all*** monomers from each of said additional monomer series to form said plurality of ***all*** copolymers; wherein said homologous variations of said ***all*** monomer series are selected to determine the effect of independently varying

at least two different structural features of said copolymer on at least one end-use property of said copolymer"; and/or ***all*** random and block polymers and copolymers of additional second, third, etc. monomeric species(as defined in claim 19). The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to practice the invention commensurate in scope with these claims.

Factors considered in making such determinations are set forth in *In re Wands*, 858 F.2d 731, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988). As discussed below, those factors include, but are not limited to, the: (1) breadth of the claims; (2) nature of the invention; (3) state of the prior art; (4) level of one of ordinary skill; (5) level of predictability in the art; (6) amount of direction provided by the inventor; (7) existence of working examples; and (8) quantity of experimentation needed to make or use the invention cased on the disclosure content.

~~In the present case, [1] the breadth of the claims encompass a copolymer array product.~~ However, the examples in the specification teach a copolymer array product of polyacrylate copolymers and methods for the synthesis of said polyacrylate copolymers prepared by the condensation of a specific monomeric units, i.e., tyrosine-derived diphenol compounds and a dicarboxylic acids, such as those recited in the specification on page 6, lines 14-29 to page 7, lines 1-29, page 12, lines 16-31 to page 22, lines 1-28 and Example Section on page 24, lines 27-31 to page 38, lines 1-14, to yield positive or negative results; [2] the nature of the invention cannot be determined in light of the foregoing and without knowing the exact components, polymeric or monomeric, catalytic, etc. materials that form the copolymer product array or are used and/or

tested in the corresponding process of the instant invention; [3] and [5] the state of the art and the level of predictability in the art cannot be predicted with any certainty what specific components, polymeric or monomeric, catalytic, etc. materials that form the copolymer product array or are used and/or tested in the corresponding process and are likely to provide productive results beyond those methods taught in the specification; [4] and [6] the inventor provides no guidance beyond the copolymer array product of polyacrylate copolymers and methods for the synthesis of said polyacrylate copolymers prepared by the condensation of a tyrosine-derived diphenol compound and a dicarboxylic acid as previously mentioned. As a result one of ordinary skill in the art could not predict what other what specific components, polymeric or monomeric, catalytic, etc. materials that form the copolymer product array or are used and/or tested in the corresponding process in the claimed invention; and [7] and [8] while the existence of working examples are limited to Example Section on page 24, lines 27-31 to page 38, lines 1-14, an indeterminate quantity of experimentation would be necessary to determine what other what specific components, polymeric or monomeric, catalytic, etc. materials that form the copolymer product array or are used and/or tested in the corresponding process in the claimed invention

In light of the preceding discussion, one skilled in the art ***could not practice*** the claimed invention ***without undue experimentation,*** as claims 1-3, 5, 9-10, 14, 17-21, 23-24 and 26-27 fail to correlate reasonably with either the enabling disclosure of the specification and the claims.

16. Claims 1-3, 5, 9-10, 14, 17-21, 23-24 and 26-27 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

17. Claims 1, 3, 10 and 19 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

18. Claim 1 for being vague and indefinite in that one or more of those claims recite the following terms: [1] in the preamble: "multi-dimensional copolymer array"; it is unclear what the aforementioned term "multidimensional" refers to, as the metes and bounds of the aforementioned claim cannot be determined as the specification, claims and art do not recognize what constitutes a "multidimensional array", i.e., e.g., is what is being referred to the three dimensional coordinates of such an array or does that term refer to the chemical, physical and/or material properties of the formed copolymer array products of the claimed invention? Applicants are requested to point to support for the aforementioned terms and clarification is requested.; [2] in the preamble: "variable sets of monomers"; it is unclear what the aforementioned term "variable sets" refer to, as the metes and bounds of the aforementioned claim cannot be determined as the specification, claims and art do not recognize what constitutes a "variable sets of monomers", i.e., e.g., what monomeric units are used to formed the copolymer arrays and how is variability in those monomers determined, based upon core chemical structure and different

functional group variations on that structure?. Applicants are requested to point to support for the aforementioned terms and clarification is requested.;

[3] in steps (a) - (c): "non-varying polymerizable functional groups", polymerizable functional groups"; it is unclear what the aforementioned terms refer to, as the metes and bounds of the aforementioned claim cannot be determined as the specification, claims and art do not recognize what constitutes those said functional groups, i.e., e.g., there is no distinguishment between what chemical functional groups attached to what portions of what monomeric, polymeric components, etc. are variable and/or polymerizable? Applicants are requested to point to support for the aforementioned terms and clarification is requested.; and

[4] "two different structural features of said copolymer" and "one end-use property of said copolymer"; it is unclear what the aforementioned terms refer to, as the metes and bounds of the aforementioned claim cannot be determined as the specification, claims and art do not recognize what constitutes "two different structural features", i.e., e.g., there is no distinguishment between what chemical functional groups attached to what portions of what monomeric, polymeric components, etc. are variable and/or polymerizable, and/or distinguishable from another component species? Applicants are requested to point to support for the aforementioned terms and clarification is requested.

19. Claim 3 for being vague and indefinite in that it recites the following term: [1] "wherein said free radical process is ionic polymerization"; it is unclear what the aforementioned term "ionic polymerization" refers to, as the metes and bounds of the aforementioned claim cannot be

determined as the specification, claims and art do not recognize that "ionic initiation of any polymerization" is a category of any free radical initiated reaction, i.e., e.g., in conventional chemical arts radical initiated reaction mechanisms are differentiated from ionic reaction mechanisms. Applicants are requested to point to support for the aforementioned terms and clarification is requested.;

20. Claim 10 for being vague and indefinite in that one or more of those claims recite the following terms: [1] in the preamble: "multi-dimensional condensation-type copolymer array"; it is unclear what the aforementioned terms "multidimensional" or "condensation-type" refer to, as the metes and bounds of the aforementioned claim cannot be determined as the specification, claims and art do not recognize what constitutes a "multidimensional array", i.e., e.g., is what is being referred to the three dimensional coordinates of such an array or does that term refer to the chemical, physical and/or material properties of the formed copolymer array products of the claimed invention? or what constitutes a "condensation-type" array? Applicants are requested to point to support for the aforementioned terms and clarification is requested.;

[2] in the preamble: "varying series of different monomers"; it is unclear what the aforementioned term "varying series" refer to, as the metes and bounds of the aforementioned claim cannot be determined as the specification, claims and art do not recognize what constitutes a "varying series", i.e., e.g., what monomeric units are used to formed the copolymer arrays and how is variability in those monomers determined, based upon core chemical structure and different

functional group variations on that structure?. Applicants are requested to point to support for the aforementioned terms and clarification is requested.;

[3] in steps (a) - (c): [a] "non-varying polymerizable functional groups", "polymerizable functional groups". "condensation-type copolymers"; it is unclear what the aforementioned terms refer to, as the metes and bounds of the aforementioned claim cannot be determined as the specification, claims and art do not recognize what constitutes those said functional groups, i.e., e.g., there is no distinguishment between what chemical functional groups attached to what portions of what monomeric, polymeric components, etc. are variable and/or polymerizable or even what the difference is between a condensation type copolymer from a non-condensation type copolymer? Applicants are requested to point to support for the aforementioned terms and clarification is requested.;

[4] "two different structural features of said copolymer" and "one end-use property of said copolymer"; it is unclear what the aforementioned terms refer to, as the metes and bounds of the aforementioned claim cannot be determined as the specification, claims and art do not recognize what constitutes "two different structural features", i.e., e.g., there is no distinguishment between what chemical functional groups attached to what portions of what monomeric, polymeric components, etc. are variable and/or polymerizable, and/or distinguishable from another component species? Applicants are requested to point to support for the aforementioned terms and clarification is requested.

21. Claim 19 for being vague and indefinite in that it recites the following term: [1] "random and block polymers and copolymers thereof"; it is unclear what the aforementioned term "ionic polymerization" refers to, as the metes and bounds of the aforementioned claim cannot be determined as the specification, claims and art do not recognize what constitutes "random and block polymers and copolymers of the preceding list monomers as defined in the instant claim." Applicants are requested to point to support for the aforementioned terms and clarification is requested

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

23. Claims 1-3, 5, 9-10, 14, 17-21, 23-24 and 26-27 under 35 U.S.C. § 103(a) as being unpatentable over Kohn et al., U.S. Patent No.5,216,115 A, Filed: August 13, 1992, Issued: June 1, 1993, Gordon et al. (J. Med. Chem., 1994, Vol. 37, No. 10, 1385-1401) and Still et al., U.S. Patent No.5,565,324, Filed: April 13, 1994, Issued: October 15, 1996.

Kohn et al. teaches: [1] polyacrylates and methods for the synthesis of bioerodible polyarylates derived from biocompatible dicarboxylic acids and natural amino acid-derived diphenol starting materials; [2] wherein a polymerization process includes the reaction of diphenol

compounds (formed from amino acid-derived monomers) are then reacted with aliphatic or aromatic dicarboxylic acids in a carbodiimide-mediated direct polyesterification using DPTS as a catalyst to form aliphatic or aromatic polyarylates recovering the resulting polyarylate.[3] wherein said bioerodible polyarylates derived from the natural amino acid L-tyrosine derived diphenols and biocompatible aromatic and aliphatic dicarboxylic acids; [4] wherein said polyarylates, include polymers having pendant side chains on each repeating unit (i.e., said structural feature represents a further degree of freedom in the design of polyarylates and can be used to modify the overall physicomechanical properties of the polymer without changing the polymer backbone structure); and alternatively, the pendent side chains can be used to crosslink the polymer chains to form a polymeric matrix into which a biologically or pharmacologically active material can be physically imbedded or dispersed; [5] wherein said aliphatic and/or aromatic dicarboxylic acids, include ~~substituted and unsubstituted alkyl or alkylaryl groups containing up to 18 carbon atoms and~~ preferred aliphatic dicarboxylic acid starting materials therefore include the intermediate dicarboxylic acids of the cellular respiration pathway known as the Krebs Cycle (i.e., these dicarboxylic acids include alpha-ketoglutaric acid, succinic acid, fumaric acid, malic acid and oxaloacetic acid, etc.) and [6] wherein the products form nontoxic bioerodible and biodegradable products and are usable as degradable, medical implant materials.; i.e., molded articles prepared from the polyarylates are useful, inter alia, as degradable biomaterials for medical implant applications: for use as vascular grafts and stents, bone plates, sutures, implantable sensors,

barriers for surgical adhesion prevention, implantable drug delivery devices and other therapeutic aids and articles which decompose harmlessly within a known period of time.

In view of the above, each of the aforementioned Kohn et al. U.S. Patents ***differ*** from the claimed invention in that it ***does not teach*** [a] the synthesis of multi-dimensional arrays of the aforementioned polymers by using the synthetic methods of preparation as defined above.

However, Gordon et al. teaches: [1] the application of known pharmacophores amenable to assembly via combinatorial methods to form libraries, arrays (i.e., compositions of two or more) with known synthetic organic reaction processes for the synthesis of identified target or biological compound(s) and/or generation of combinatorial libraries; and [2] the construction and or use of large compound libraries for uses such as biological assays or screening

Gordon et al. teaches [1] "when small-molecule leads for a target have been previously defined, the notion of searching for more potent derivatives among libraries combinatorially enriched in specific pharmacophore analogs is an obvious tactic to pursue (see, page 12591, col. 2, lines 18-21)"; [2] the applicability of a "spectrum of molecular diversity" strategy in the generation of a library, array or combinatorial library, array, etc. comprised of a few to many molecules (such an approach approximates the number of molecules of in a given library based upon molecule type, i.e., recombinant or multi- peptides, encoded, non-encoded synthetic or recursively factored compounds, etc. (see, page 1397, Figure 19 and lines 19 to 21); [3] that "a key aspect in the successful application of combinatorial technologies to drug discovery is the requirement for having a closely linked, coordinates process for the integration of synthesis and

screening" (see page 1397, col. 2, lines 7-12); and [4] successful application of "molecular diversity" strategies to develop methods of synthesis and screening of compounds and/or combinatorial libraries are possible when a conventional organic target compounds with a known biological pharmacophore activity is identified with a known synthetic route or reaction sequence; such methods of synthesis and screening combinatorial libraries, conducting a synthetic reaction by immobilization of reactant compounds, receptors, etc. via spacers or linkers (i.e., e.g., such as poly(oxyethylene) spacer moiety, see col. 2, line 30; also see Still et al. teaches the a general list and the use of conventional linkers with bi-functionality, whereby the resin and building blocks can be attached to either end of the linker, which include alkyl diols, see, col. 12, line 56-60, Linker F; note that each of the aforementioned references read on claims 19 and 22 of the claimed invention) to conventionally known solid supports (i.e., e.g., such as, microtiter plates, Merrifield resins, see col. 2, page 1240, lines 24-36; Tentagel resin beads of 90 μm-diameter, see page 1246, line 26-35; polyacrylamide and halogenated resins, see page 1246, col. 2, lines 23-26, which read on claims 17-18 and 23 of the claimed invention), beads, polymeric resins, microtiter wells or chromatography supports followed by the capture of complexes (see generally for examples of resins, linkers described therein and page 1393, col. 1, lines 31-43 to col. 2, lines 1-18).

A person of ordinary skill in the art would have been motivated to make and screen novel co-polymer arrays of poly acrylates, prepared by the condensation of tyrosine derived diphenol compounds and different monomers, because such polymers products form nontoxic bioerodible

and biodegradable products and are usable as degradable, medical implant materials with practical medicinal applications as taught by the Kohn et al..

In light of the foregoing, a person of ordinary skill in the art would have had a reasonable expectation of success in synthesizing co-polymer arrays of poly acrylates, prepared by the condensation of tyrosine derived diphenol compounds and different monomers, such as dicyanates and corresponding derivative compoundss, because [1] Kohn et al. teaches that the synthetic methods for the preparation of the aforementioned polymers are pharmacophores with biological utility and a known synthetic preparation route; and [2] Gordon et al. teaches that "molecular diversity" strategies successfully are applied to known conventional organic target compounds with biological pharmacophore utility, a known synthetic route via, wherein such strategies may be achieved to produce arrays.

It would have been ***prima facie*** **obvious** to a person of ordinary skill in the art at the time the invention was made to modify the teachings of Kohnet al. with the teachings of Gordon et al. to synthesize co-polymer arrays, libraries, etc. and screen or assay those arrays, libraries.

24. Claims 1-3, 5, 9-10, 14, 17-21, 24 and 27 under 35 U.S.C. § 103(a) as being unpatentable over Kohn et al., U.S. Patent No. 4,980,449, Filed: July 14, 1988, Issued: December 25, 1990, Gordon et al. (J. Med. Chem., 1994, Vol. 37, No. 10, 1385-1401) and Still et al., U.S. Patent No.5,565,324, Filed: April 13, 1994, Issued: October 15, 1996.

Kohn et al. teaches: [1] the synthesis of novel polyiminocarbonates polymers that anticipate the polymers of the claimed invention; [2] novel solution polymerization and interfacial

polymerization processes for the preparation of polyiminocarbonates in which cyanate compounds are reacted with diphenol compounds in the presence of a strong base catalyst.; [3] wherein polyiminocarbonates are structurally related to polycarbonates, i.e., said polyiminocarbonates have imino groups in the places normally occupied by carbonyl oxygen in the polycarbonates forming linkages that impart a significant degree of hydrolytic instability to the polymer, with desirable mechanical properties akin to those of the corresponding polycarbonates.; [4] wherein higher molecular weight iminocarbonates are desired because higher molecular weight polymers generally provide better mechanical properties, with molecular weights exceeding 70,000 daltons.; [5] wherein the process or method of preparing polymers provides an improved solution polymerization process, incorporating the discovery that solvent purity, catalyst selection and solvent selection significantly affect the results obtained in the solution polymerization reaction, which includes: [a] the steps of contacting a diphenol with a dicyanate in solution in an essentially pure solvent in the presence of a catalyst selected from the group consisting of metal hydroxides, metal hydrides and metal alkoxides and recovering the resulting polyiminocarbonate; [b] the solvent preferably is selected from the group consisting of acetone and tetrahydrofuran ("THF").; [c] the catalyst preferably is an alkali metal, hydroxide or alkoxide, such as sodium hydroxide or potassium tertbutoxide.; [d] in such interfacial polymerization according to any of the three modes, as discussed above, the reaction rate, yield, and product molecular weight can be significantly increased by adding a phase transfer catalyst (PTC) to the system, as by incorporating the PTC in the aqueous solution. PTC's are salt-like molecules that serve to transfer reactants

between the aqueous and organic phases in an interfacial polymerization.; [e] the mechanisms by which PTC's function to transfer reactants, as well as numerous examples of PTC's suitable for the reaction system of the present invention are disclosed in the standard reference Phase Transfer Catalysis, such as tetrabutyl ammonium bromide (TBAB), N-ethyl-4-dimethylamino pyridine are preferred PTC's. TBAB is a most preferred PTC.; [6] such reactions should be conducted in a vessel isolated from oxygen and water vapor.; and [7] that the products of the claimed invention have biological utility in medical applications.

In view of the above, each of the aforementioned Kohn et al. U.S. Patents ***differ*** from the claimed invention in that it ***does not teach*** [a] the synthesis of multi-dimensional arrays of the aforementioned polymers by using the synthetic methods of preparation as defined above.

However, Gordon et al. teaches: [1] the application of known pharmacophores amenable to assembly via combinatorial methods to form libraries, arrays (i.e., compositions of two or more) with known synthetic organic reaction processes for the synthesis of identified target or biological compound(s) and/or generation of combinatorial libraries; and [2] the construction and or use of large compound libraries for uses such as biological assays or screening

Gordon et al. teaches [1] "when small-molecule leads for a target have been previously defined, the notion of searching for more potent derivatives among libraries combinatorially enriched in specific pharmacophore analogs is an obvious tactic to pursue (see, page 12591, col. 2, lines 18-21)"; [2] the applicability of a "spectrum of molecular diversity" strategy in the generation of a library, array or combinatorial library, array, etc. comprised of a few to many

molecules (such an approach approximates the number of molecules of in a given library based upon molecule type, i.e., recombinant or multi- peptides, encoded, non-encoded synthetic or recursively factored compounds, etc. (see, page 1397, Figure 19 and lines 19 to 21); [3] that "a key aspect in the successful application of combinatorial technologies to drug discovery is the requirement for having a closely linked, coordinates process for the integration of synthesis and screening" (see page 1397, col. 2, lines 7-12); and [4] successful application of "molecular diversity" strategies to develop methods of synthesis and screening of compounds and/or combinatorial libraries are possible when a conventional organic target compounds with a known biological pharmacophore activity is identified with a known synthetic route or reaction sequence; such methods of synthesis and screening combinatorial libraries, include conducting a synthetic reaction by immobilization of reactant compounds, receptors, etc. via spacers or linkers (i.e., e.g., such as poly(oxyethylene) spacer moiety, see col. 2, line 30; also see Still et al. teaches the a general list and the use of conventional linkers with bi-functionality, whereby the resin and building blocks can be attached to either end of the linker, which include alkyl diols, see, col. 12, line 56-60, Linker F; note that each of the aforementioned references read on claims 19 and 22 of the claimed invention) to conventionally known solid supports (i.e., e.g., such as, Merrifield resins, see col. 2, page 1240, lines 24-36; Tentagel resin beads of 90 μm-diameter, see page 1246, line 26-35; polyacrylamide and halogenated resins, see page 1246, col. 2, lines 23-26, which read on claims 17-18 and 23 of the claimed invention), beads, polymeric resins, microtiter wells or

chromatography supports followed by the capture of complexes (see generally for examples of resins, linkers described therein and page 1393, col. 1, lines 31-43 to col. 2, lines 1-18).

A person of ordinary skill in the art would have been motivated to make and screen novel co-polymer arrays of poly acrylates, prepared by the condensation of tyrosine derived diphenol compounds and different monomers, because such polymers are known to have practical medicinal applications as taught by the Kohn et al..

In light of the foregoing, a person of ordinary skill in the art would have had a reasonable expectation of success in synthesizing co-polymer arrays of poly acrylates, prepared by the condensation of tyrosine derived diphenol compounds and different monomers, such as dicyanates and corresponding derivative compoundss, because [1] Kohn et al. teaches that the synthetic methods for the preparation of the aforementioned polymers are pharmacophores with biological utility and a known synthetic preparation route; and [2] Gordon et al. teaches that "molecular diversity" strategies successfully are applied to known conventional organic target compounds with biological pharmacophore activity, a known synthetic route via, wherein such strategies may be achieved to develop co-polymer arrays.

It would have been ***prima facie*** **obvious** to a person of ordinary skill in the art at the time the invention was made to modify the teachings of Kohnet al. with the teachings of Gordon et al. to synthesize co-polymer arrays, libraries, etc. and screen or assay those arrays, libraries.

Status of Claims

25. No claims are allowed in the above-identified application.

Conclusion

26. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Grace C. Hsu, Ph.D., J.D. whose telephone number is (703) 308-7005. The Examiner may be reached during normal business hours, Monday through Friday from 8:30 am to 5:30 pm (EST). a message may be left on the Examiner's voice mail.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Jythosna Venkat, Ph.D., may be reached at (703) 308-2439. The fax number assigned to Group 1627 is (703) 305-4242. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 1627 receptionist whose telephone number is (703) 308-0196.

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